

Amendments to the Claims:

The following list of claims will replace all prior versions of the claims in the application:

1. *(Canceled)*
2. *(Currently amended)* A method for assessing toxicity ~~and toxicology~~ of a compound of interest, comprising:
 - a) exposing tissue samples comprising a set of genes to ~~a~~ the compound of interest;
 - b) ~~monitoring the response~~ measuring the hybridization signal of each gene in the set of genes to the compound of interest;
 - c) creating gene expression profiles using two or more variables, wherein the two or more variables include time and dose;
 - d) creating composite variables from the gene expression profiles of (c);
 - e) creating one composite from the composite variables of (d); and
 - f) comparing the results of (e) to a profile of a known compound to determine whether there is a toxicological response to the compound of interest.
3. *(Previously added)* The method of Claim 2, wherein the set of genes comprises 10-100,000 genes.
4. *(Currently amended)* The method of Claim 2, wherein the two or more variables are time, further include treatment or dose.⁶
5. *(Canceled)*
6. *(Previously added)* The method of Claim 2, wherein step (b) further comprises averaging the response hybridization signals of the genes is averaged to determine a background level; and selecting for further analysis the hybridization signals that exceed a pre-selected percentage of the background level.

7. *(Previously amended)* The method of Claim 2, wherein step (c) comprises performing contrast analysis.

8. *(Previously amended)* The method of Claim 2, wherein step (c) comprises performing cluster analysis.

9. *(Previously amended)* The method of Claim 2, wherein step (d) comprises performing principal components analysis.

10. *(Currently amended)* The method of Claim 2, wherein the composite variables of (e) are created using logistic regression[,] or discriminant analysis.

11. *(Currently amended)* A method for screening a compound of interest for toxicological effect, comprising:

(a) selecting a plurality of polynucleotide targets wherein the polynucleotide targets have a first gene expression levels altered in ~~tissues~~ a first tissue sample treated with known toxicological agents;

(b) treating a second tissue sample with a the compound ~~to be tested~~ of interest to induce second gene expression levels of a the plurality of polynucleotide targets; and

(c) comparing the first expression ~~level~~ levels of (a) with the second expression ~~level~~ levels of (b) to generate a measure of similarity;

wherein the measure of similarity is indicative of toxicological effect of the compound of interest.

12. *(Canceled)*

13. *(Previously added)* The method of Claim 11, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.

14. (*Previously added*) The method of Claim 11, wherein the known toxicological agent is acetaminophen.

15. (*Previously added*) The method of Claim 11, wherein the known toxicological agent is CCl₄.

16. – 22. (*Canceled*)

23. (*Previously added*) The method of Claim 2, wherein step (d) comprises performing partial least squares analysis.

24. (*Previously added*) The method of Claim 2, wherein step (d) comprises performing factor analysis.

25. (*Currently amended*) The method of Claim 1, wherein the compound of interest is acetaminophen.

26. (*Currently amended*) A method for assessing the toxicity ~~and toxicology~~ of a compound of interest, comprising:

- a) exposing tissues comprising a set of genes to ~~a~~ the compound of interest;
 - b) generating gene expression data corresponding to the ~~response~~ hybridization signal of each gene in the set of genes to the compound of interest;
 - c) selecting a subset of the gene expression data which are time stable and dose dependent;
 - d) combining the subset of gene expression data into one or more composite variables to assign each gene to a pattern; and
 - e) converting the one or more composite variables into one predictive composite measure for determining a probability of similarity;
- wherein the ~~one predictive measure~~ probability of similarity comprises an indicator of toxicological effect of the compound of interest.

27. *(Previously added)* The method of claim 26, wherein step (c) comprises performing contrast analysis.

28. *(Previously added)* The method of claim 26, where step (d) comprises performing principal components analysis.

29. *(Previously added)* The method of claim 28, wherein step (e) comprises performing a logistic regression using the principal components identified in step (d).

30. *(New)* The method of claim 26, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.

31. *(New)* The method of claim 26, wherein step (b) further comprises averaging the hybridization signals of the genes to determine a background level, and wherein the gene expression data is generated from the hybridization signals that exceed a pre-selected percentage of the background level.

32. *(New)* The method of Claim 2, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.

33. *(New)* The method of Claim 2, wherein the compound of interest is CCl_4 .